1987 Field Crop Variety Recommendations for Manitoba

This publication is for use with the *1986 Field Crop Production Recommendations for Manitoba* booklet. New production recommendations for 1987 are listed in the last pages of this publication.

87-02131/

1987
FIELD CROP
VARIETY RECOMMENDATIONS
FOR MANITOBA

As approved November, 1986 by the
Manitoba Agricultural Services
Co-ordinating Committee

A Note on Manitoba Agricultural Services Coordinating Committee

Agriculture Canada has a number of Canada Agricultural Services Coordinating Committees (CASCC) whose function is to provide a vehicle for recommendations on a wide range of agricultural activities—including research to Agriculture Canada. Under each CASCC committee, referred to as Canada Committees, there are a number of "expert committees" which meet on an annual basis. They provide recommendations to CASCC and help to coordinate the great diversity of agricultural activities.

On the provincial level, similar organizations exist. In Manitoba, the overall committee is the **Manitoba Agricultural Services Coordinating Committee (MASCC).** This main committee is composed of a number of "lead" committees, each with a number of sub-committees. The lead committee chairpersons are automatically designated as members of the main MASCC. There are a number of duties allocated to the lead committees, but their main function is to act as a vehicle for recommendations that are passed to MASCC. In turn, MASCC selects, priorizes, and passes them to the appropriate Canada Committees, particularly where Agriculture Canada action is requested.

The Crop Science Lead Committee of MASCC has an additional function of providing crop variety recommendations, a duty assumed by the Agronomists' Conference in the past. The various sub-committees under the Crop Science Lead Committee provide the necessary expertise, review the data and propose variety recommendations on cereal, special, and forage crops grown in Manitoba. These recommendations are discussed, ratified, or rejected at an annual meeting of the Crop Science Lead Committee—which all members of the sub-committees are expected to attend.

The final crop variety recommendations are printed annually in the *Field Crop Variety Recommendations for Manitoba,* and *Field Crop Production Recommendations* publications.

MASCC's Soil Science Lead Committee provides a similar function in proposing recommendations on all aspects of fertilizer applications and rates. These are also contained in the *Field Crops Production Recommendations* booklet.

The Agronomists' Conference no longer assumes the responsibility of *Field Crop Recommendations* but functions as a forum for agricultural scientists, extension workers, and farmers to participate in an exchange of information.

This publication is designed to provide up-to-date information on crop varieties. The variety recommendations are prepared by sub-committees of the Crop Science Lead Committee of MASCC, and published under the authority of Manitoba Agriculture. Additional information is available from Manitoba Agriculture. Contact your local Agricultural Representative office, or write to:

MANITOBA AGRICULTURE
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411 York Avenue
Winnipeg, Manitoba, R3C 3M1
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Ask for the required information on a specific crop, as well as *The List of Publications.*

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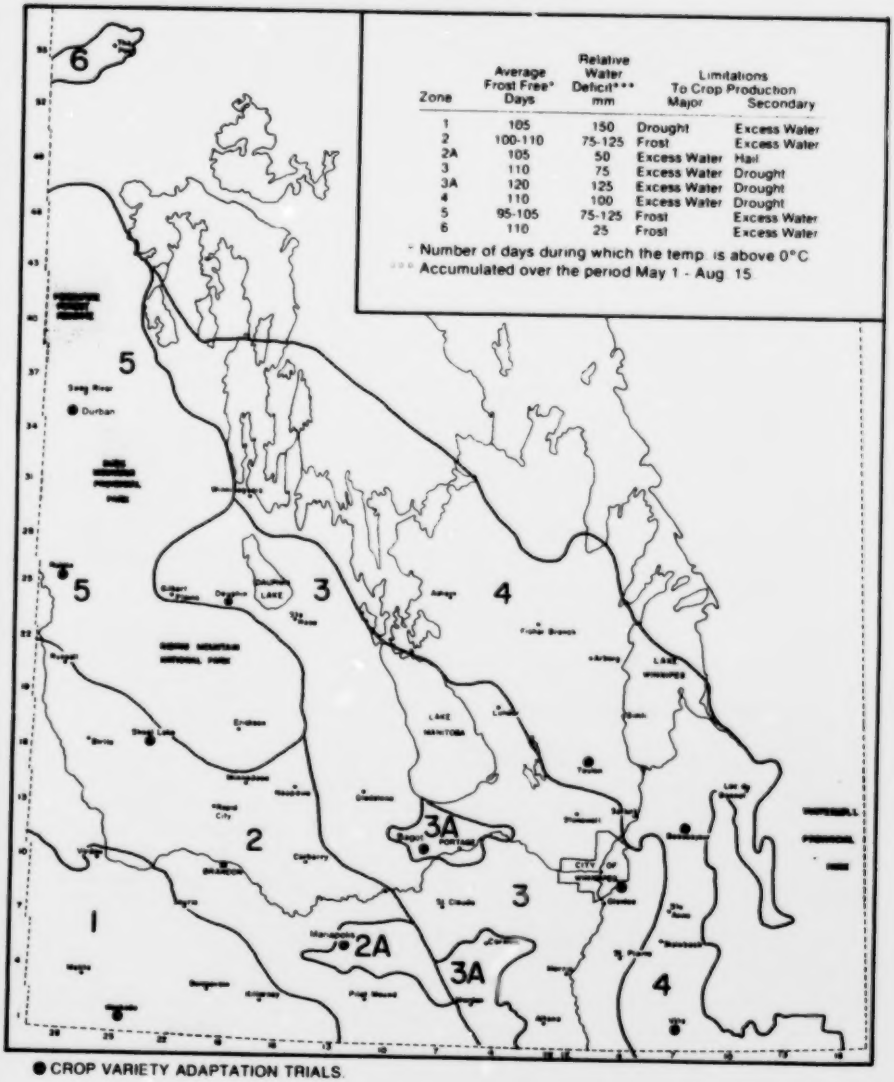
CROP INSURANCE

Except for grain corn, safflower, spring rye and forage crops, all varieties recommended in this publication are insurable under the Canada-Manitoba Crop Insurance Program. For information on the insurability of varieties not recommended in this publication, please contact your nearest Crop Insurance office.

USE OF GOOD SEED

Always use good, preferably pedigreed seed, of a recommended variety. Pedigreed seed is produced under the rules and regulations of the Canadian Seed Growers' Association. It has varietal purity, and must meet the high level of quality and cleanliness required in pedigreed seed grades. In field trials, certified seed has consistently outyielded seed derived from non-pedigreed sources.

CROP VARIETY ZONE MAP FOR MANITOBA



Zone	Average Frost Free* Days	Relative Water Deficit*** mm	Limitations To Crop Production Major	Secondary
1	105	150	Drought	Excess Water
2	100-110	75-125	Frost	Excess Water
2A	105	50	Excess Water	Hail
3	110	75	Excess Water	Drought
3A	120	125	Excess Water	Drought
4	110	100	Excess Water	Drought
5	95-105	75-125	Frost	Excess Water
6	110	25	Frost	Excess Water

* Number of days during which the temp. is above 0°C

*** Accumulated over the period May 1 - Aug. 15

● CROP VARIETY ADAPTATION TRIALS.

CEREAL CROPS

BARLEY

• Recommended Varieties

For Malting or Feed

Argyle – all zones – 6-row (blue aleurone)
Bonanza – all zones – 6-row (blue aleurone)
Conquest – all zones – 6-row (blue aleurone)
Ellice – Zones 1, 2, 3 & 5 – 2-row (yellow aleurone) *See Comments*

For Feed (yellow aleurone)

Bedford – all zones – 6-row
Heartland – all zones – 6-row
Leduc – Zones 1, 2, 5 and 6 – 6-row *See Comments*
Norbert – all zones – 2-row
Tupper – all zones – 6-row hulless *See Comments*

Comments

- Ellice: The resistance of Ellice to stem rust and most of the prevalent races of net blotch permit this cultivar to be grown in the eastern prairies, where Klages and Harrington can not be grown because of susceptibility to these diseases. Ellice has stronger straw and matures 2.5 days earlier than Klages. Its yield, test weight and plumpness are also superior to those of Klages, and they compare favorably with those of Harrington. Ellice seed was released to SeCan in 1983.
- Leduc: Not recommended for areas where lodging is a serious problem. Leduc may not be recommended for 1988.
- Tupper: A new, hulless, six-row feed variety for use in swine, poultry, and calf (creep) rations, as a high-energy feed. Tupper is not acceptable for on-board marketing. It is intended for private sale or on-farm use, and can be substituted for feed wheat – particularly where climate limits wheat production. Tupper yielded 117 percent of Neepawa, and equal to HY 320 province-wide from 1982 to 1985.

Note

There are currently no recommended semi-dwarf feed barley varieties for this province, although Duke and Samson are licensed and available in Western Canada. Semi-dwarf feed varieties are intended for use in integrated cereal management (ICM) production, where high moisture and fertility, and timely use of herbicides are essential for optimal production. Duke and Samson are approximately equal in yield under similar conditions. Duke has improved rust resistance and straw standability, when compared with Samson.

• Barley Variety Descriptions

Variety	Yield as % of Bonanza	Years Tested	Days to Maturity	Height cm	Height (in)	Bulk Density kg/m³	Bulk Density (lb/bu)	Resistance to: Lodging	Stem Rust	Loose Smut	Surface Borne Smuts	Root Rot	Net Blotch
Argyle	101	5	86	90	(36)	625	(48.5)	excel.	good	poor	poor	fair	fair
Bonanza	100	5	85	89	(36)	636	(49.4)	fair	good	poor	poor	fair	fair
Conquest	94	5	84	93	(37)	631	(49.0)	good	good	poor	fair	fair	fair
Ellice	91	5	87	80	(32)	650	(50.4)	good	good	poor	poor	fair	fair
Bedford	108	5	87	79	(32)	659	(51.2)	excel.	good	poor	fair	fair	fair
Heartland	111	5	87	75	(30)	638	(49.5)	good	good	poor	fair	fair	good
Leduc	109	5	89	88	(35)	634	(49.2)	fair	good	fair	fair	fair	fair
Norbert	98	5	87	80	(32)	671	(52.1)	excel.	good	poor	poor	fair	fair
Tupper	89	4	85	89	(36)	700	(54.4)	fair	good	fair	fair	fair	fair

• Yields by Crop Variety Zone (percent)

Variety	Years Tested	Zone 1 & 2*	3	4	5	6
Argyle	5	101	100	105	101	95
Bonanza	5	100	100	100	100	100
Conquest	5	94	97	95	90	94
Ellice	5	93	95	86	88	88
Bedford	5	105	110	109	103	115
Heartland	5	112	113	112	98	131
Leduc	5	107	111	106	109	133
Norbert	5	96	101	101	89	102
Tupper	4	86	92	87	89	106

**Zone 1 & 2 data combined due to insufficient test sites in Zone 1.*

OATS

• Recommended Varieties

Dumont – all zones
Fidler – all zones
Riel – all zones

Comments

Riel is a tan-coloured oat variety with exceptional kernel quality characteristics. When compared with Dumont, Riel has higher protein, lower hull content and higher test weight. Post-harvest sprouting resistance is greater than either Dumont or Fidler. Resistance to rust, smut and Victoria blight are equal to that of Dumont.

• Oats Variety Descriptions

Variety	Yield as % of Dumont	Years Tested	Days to Maturity	Height cm	Height (in)	% Hull	Test Weight kg/m³	Test Weight (lb/bu)	Resistance to: Lodging	Stem Rust	Leaf Rust	Smut
Dumont	100*	5	94	103	(41)	24.0	495	(39.7)	fair	good	v. good	good
Fidler	95	5	91	99	(39)	24.7	476	(38.2)	good	good	v. good	good
Riel	95	3	93	105	(41)	21.5	508	(40.7)	good	good	v. good	good

**Yield comparisons of varieties to Dumont (basis Dumont as 100%) were made on the same year(s) and test(s) basis.*

• Yields by Crop Variety Zone (percent)

Variety	Years Tested	Zone				
		1 & 2*	3	4	5	6
Dumont**	5	100	100	100	100	100
Fidler	5	96	95	90	95	105
Riel	3	95	93	96	100	93

*Zone 1 & 2 data combined due to insufficient test sites in Zone 1.
**Yield comparisons of varieties to Dumont (basis Dumont as 100%) were made on the same years(s) and test(s) basis.

RYE

• Recommended Varieties

Fall Rye
Musketeer – all zones
Prima – all zones
Puma – all zones

Spring Rye
Gazelle – all zones

Comments
Prima is a newly licensed variety of fall rye developed at the Agriculture Canada Research Station, Swift Current. Prima has high yielding potential, good winter hardiness, high kernel and test mass. It is rated medium in maturity and resistance to lodging. Seed is available through SeCan.

Note
Puma may be removed from the recommended list for 1988.

• Rye Variety Descriptions

Variety	Yield as % of Puma	Years Tested	Order of Maturity	Winter Survival	Resistance to:		
					Lodging	Shattering	Ergot
Fall Varities:							
Musketeer	109	5	1	very good	good	good	poor
Prima	113	1	2	very good	fair	good	poor
Puma	100	5	2	very good	fair	fair	fair
Spring Variety:							
Gazelle	75	5	–	–	fair	good	poor

TRITICALE

• Recommended Varieties

Carman – all zones
Welsh – all zones

Comments
Triticale yield and protein content are about equal to that of Glenlea wheat. The main uses of triticale, at present time in Canada, are as food for human consumption and for livestock feed.

• Triticale Variety Descriptions

Variety	Yield as % of Glenlea	Years Tested	Maturity (days)	Height		Resistance to:			
				cm	(in)	Lodging	Stem Rust	Leaf Rust	Loose Smut
Carman	89	5	103	104	(41)	good	good	fair	fair
Welsh	97	5	102	94	(37)	good	good	fair	fair

• Yields by Crop Variety Zone (as % of Glenlea)

Varieties	Years Tested	Zone				
		1 & 2*	3	4	5	6
Carman	5	99	94	84	86	77
Welsh	5	97	100	97	102	84

*Zone 1 & 2 data combined due to insufficient test sites in Zone 1.

WHEAT

• Recommended Varieties

Eligible for Canada Western Red Spring Grades

Benito – all zones
Columbus – all zones
Katepwa – all zones *See Comments*
Neepawa – all zones *See Comments*
Roblin – all zones *See Comments*

Eligible for Canada Prairie Spring (Red) Grades

HY 320 – all zones

Eligible for Canada Utility Grades

Glenlea – all zones

Eligible for Canada Western Amber Durum Grades

Arcola – all zones
Coulter – all zones
Medora – all zones
Sceptre – all zones

Comments

Katepwa has slightly more leaf rust resistance than Neepawa, but will also suffer yield losses in a leaf rust epidemic year.

Neepawa is fairly susceptible to leaf rust, and will suffer some yield loss in a year when leaf rust attacks early and severely.

Roblin is a newly-licensed variety with early maturity and good lodging resistance. It has a shorter height, larger kernel and higher protein than the other CWRS varieties. In the three years of testing for licensing, it yielded the same as Neepawa. Certified seed will not be available to SeCan members in 1987.

Note

Fielder is a soft white spring wheat usually grown under irrigation. It is **not** recommended in Manitoba. It is susceptible to stem rust and the smuts.

• Wheat Variety Descriptions

Variety	Yield as % of Neepawa	Years Tested	Days to Maturity	Seed Size	Height	Resistance to: Lodging	Stem Rust	Leaf Rust	Loose Smut	Bunt
Benito	98	5	98	small	medium	good	good	v. good	good	fair
Columbus	96	5	100	medium	medium -	excel.	good	good	fair	good
Katepwa	103	5	98	medium	medium	excel.	good	fair	good	good
Neepawa	100	5	98	medium	medium	excel.	good	poor	good	fair
Roblin	113	1	96	medium -	medium -	excel.	excel.	v. good	good	fair
HY 320	121	4	102	medium -	short	excel.	good	good	poor	v. poor
Glenlea	114	5	101	large	medium -	excel.	good	v. good	good	fair
Arcola	115	4	99	large -	medium	fair-good	good	v. good	fair	good
Coulter	111	5	99	large	medium	fair-good	good	v. good	fair	good
Medora	116	5	100	large	medium -	good	good	v. good	fair	good
Sceptre	119	2	100	large	medium -	good	good	v. good	fair	good

• Yields by Crop Variety Zone (percent)

Variety	Years Tested	Zone 1 & 2*	3	4	5	6
Benito	5	97	99	101	95	99
Columbus	5	100	94	98	95	87
Katepwa	5	100	105	105	103	98
Neepawa	5	100	100	100	100	100
Roblin	1	108	113	110	123	120
HY 320	4	120	124	113	128	117
Glenlea	5	112	112	123	115	103
Arcola	4	111	118	119	121	96
Coulter	5	113	112	110	113	89
Medora	5	116	119	121	114	92
Sceptre	2	115	129	113	122	83

**Zone 1 & 2 data combined due to insufficient test sites in Zone 1.*

WINTER WHEAT

All licensed varieties lack sufficient hardiness for conventional production in Manitoba. Direct planting into stubble provides a snow trap that improves winter survival. Currently licensed varieties are very susceptible to leaf and stem rust. Norstar is the hardiest variety available, and yielded 110 percent of the spring wheat check variety Neepawa in Manitoba trials over five years (1982-86).

OILSEEDS AND SPECIAL CROPS

BUCKWHEAT

• Recommended Varieties

Large Seeded
Mancan – all zones
Manor – all zones

Small Seeded
Tokyo – all zones

• Buckwheat Variety Descriptions

Variety	Yield as % of Tokyo	Years Tested	Days to 100% Bloom	Height cm	Height (in)	Seed Weight g/1000
Mancan	100	5	42	115	(46)	27.7
Manor	107	5	41	110	(44)	27.7
Tokyo	100*	5	40	109	(44)	22.3

**Average yield: 1550 kg/ha (1381 lb/acre) in Manitoba trials (1982-86).*

CANARYSEED

• Recommended Varieties

Alden – all zones
Keet – all zones

• Canaryseed Variety Descriptions

Variety	Yield as % of Alden	Years Tested	Days to Maturity	Height cm	Height (in)	Seed Weight g/1000
Alden	100*	5	96	78	(30.7)	7.3
Keet	104	5	96	77	(30.3)	7.2

**Average yield: 1643 kg/ha (1465 lb/acre) in Manitoba trials (1982-86).*

CANOLA-RAPESEED

• Recommended Varieties – Canola Type

(all low erucic, low glucosinolate)

Argentine Type (Brassica napus)
Regent – all zones
Westar – all zones

Triazine Tolerant Varieties
OAC Triton – all zones
Tribute – all zones

Polish type (Brassica campestris)
Candle – all zones
Tobin – all zones

Comments

The Western Canadian oilseed crushing industry now processes only seed from canola (low erucic, low glucosinolate) varieties, and importers in other countries are also developing a preference for canola. It is recommended that producers use only certified seed of the recommended canola varieties to assure acceptability of their product.

Limited production of high erucic acid rapeseed varieties for industrial markets is continuing, but these varieties are grown on a contract basis only.

Andor has been dropped from the recommended list as it was de-licensed.

Tribute, a triazine-tolerant spring canola variety, was developed by crossing Tower (carrying a triazine tolerant cytoplasm from bird's rape-Brassica campestris L.) and Altex, at the Agriculture Canada Research Station, Saskatoon. Tribute is earlier in maturity and lower in chlorophyll content than the first triazine-tolerant cultivar, OAC Triton. Tribute is later in maturity, lower in yield and oil content than Westar, and is susceptible to lodging. The seed will be distributed through SeCan.

Note

At the time of printing, no triazine herbicides were registered for the variety Tribute. Please refer to the Addendum to the 1987 Guide to Chemical Weed Control.

• Canola Variety Descriptions

Species and Variety	Yield as % of Westar	Years Tested	Days to Maturity	Height cm	Height (in)	Seed Oil (%)	Meal Protein (%)	Resistance to: White Rust/ Staghead	Resistance to: Blackleg
Argentine (B. napus)									
Regent	88	5	98	110	(44)	42.7	45.8	good	poor
Westar	100*	5	96	109	(44)	43.3	44.2	good	poor
Triazine Tolerant Varieties									
OAC Triton	73	4	100	107	(43)	40.2	46.6	good	poor
Tribute	68	1	98	104	(42)	41.0	45.7	good	poor
Polish (B. campestris)									
Candle	74	5	83	99	(39)	40.6	43.0	fair	poor
Tobin	78	5	83	100	(40)	41.8	43.4	good	poor

**Average yield: 2477 kg/ha (2212 lb/acre) in Manitoba trials (1982-86).*

• Yields by Crop Variety Zone (percent)

Species and Variety	Years Tested	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Argentine (B. napus)							
Regent	5	101	90	84	92	78	72
*Westar	5	100	100	100	100	100	100
Triazine Tolerant Varieties							
OAC Triton	4	75	77	73	77	66	55
Tribute	1	68	73	69	66	54	–
Polish (B. campestris)							
Candle	5	85	66	81	74	73	64
Tobin	5	95	61	85	78	69	78
***Westar Check**							
kg/ha		2474	2457	2495	2106	2918	2321
lbs/acre		2209	2194	2228	1880	2605	2072

FABABEANS

• Recommended Varieties

Ackerperle – all zones
Aladin – all zones
Herz Freya – all zones
Outlook – all zones
Pegasus – all zones

• Fababean Variety Descriptions

Variety	Yield as % of Pegasus	Years Tested	Seed Wt. g/1000	Days to Maturity		Protein Content %
				Average	Range	
Ackerperle	91	4	337	105	104-107	29.6
Aladin	98	4	389	106	105-107	29.8
Herz Freya	94	5	363	101	100-102	28.6
Outlook	95	4	337	104	101-106	29.6
Pegasus	100*	5	361	104	103-106	29.7

**Average yield: 4864 kg/ha (4343 lb/acre) in Manitoba trials (1982-86).*

FIELD BEANS

• Recommended Varieties

Variety	Type	
Loop	Black	South of Township 14. Zones 1, 2, 2A, 3 & 3A – and that portion of Zone 4 with a minimum corn heat unit accumulation of approximately 2400.
Seafarer	Navy	
OAC Seaforth	Navy	

Comments

OAC Seaforth, licensed in 1983, was developed by the Crop Science Department, University of Guelph and Agriculture Canada Research Station, Harrow. It has resistance to several races of bean anthracnose. OAC Seaforth is similar in yield and maturity, and it has a slightly larger seed size than Seafarer. Maintenance of breeder seed by Crop Science Department, University of Guelph.

• Field Bean Variety Descriptions

Type	Variety	Yield as % of Seafarer	Years Tested	Seed Wt. g/1000	Maturity Range in Days	Plant Height	
						cm	(in)
Black	Loop	100	2	202	103-123	50	(20)
Navy	Seafarer	100*	2	211	93-104	40	(16)
Navy	OAC Seaforth	101	2	213	95-104	40	(16)

**Average yield: 2719 kg/ha (2425 lb/acre) in Manitoba trials (1985-86).*

FIELD PEAS

• Recommended Varieties

Yellow Peas

Century – all zones – large-seeded
Titan – all zones – large-seeded.

See Comments

Tara – all zones – medium-seeded
Tipu – all zones – medium-seeded, semi-leafless
Victoria – all zones – medium-seeded
Trapper – all zones – small-seeded

Green Peas
Triumph – all zones – large-seeded

Comments
Titan, a large-seeded variety, was licensed in 1985. It outyielded Century by 10.7% in co-operative tests across Canada from 1981-84. Pedigree seed of Titan has been assigned to SeCan for distribution.

• Field Pea Variety Descriptions

Variety	Yield as % of Century	Years Tested	Days to Mature	Length of Vine cm	Length of Vine (in)	Seed Wt. g/1000	Protein %
Century	100*	4	96	116	(46)	233	23.5
Titan	106	4	96	119	(47)	258	23.1
Tara	116	4	97	108	(43)	199	23.1
Tipu	100	4	96	120	(47)	224	22.9
Victoria	110	4	90	96	(38)	185	23.9
Trapper	98	4	95	104	(41)	142	23.7
Triumph	108	4	99	83	(33)	295	23.8

**Average yield: 2416 kg/ha (2156 lb/acre) in Manitoba trials.*

• Yields by Crop Variety Zone (percent)

Variety	Zone 1	2	3	4	5
Century *	100(2)**	100(2)	100(3)	100(3)	100(1)
Titan	104	108	101	108	105
Tipu	99	111	90	98	95
Victoria	125	117	110	101	129
Triumph	117	128	94	112	83
***Century Check**					
kg/ha	2166	3207	2561	3063	2745
lb/acre	1932	2860	2284	2732	2448

***Locations in each zone.*
All data from 1986 Adaptation Trials (varieties Tara and Trapper not included in trials).

FLAX

• Recommended Varieties

Dufferin – all zones
Linott – all zones
McGregor – all zones
NorLin – all zones
NorMan – all zones

Comments
Plant all varieties early for maximum yield, particularly Dufferin and McGregor. In northern areas, use the earlier Linott, NorLin or NorMan. When seeding is delayed, Linott and NorLin will give the best results.

• Flax Variety Descriptions

Variety	Yield % of Dufferin	Days to Maturity	Height cm	Height (in)	Resistance to Lodging	Seed Wt. g/1000	% Oil Content	Oil** Quality	Reaction to: Rust	Reaction to: Wilt
Dufferin	100*	100	68	(27)	fair	5.6	44.6	182	res.	mod. res.
Linott	92	92	61	(24)	fair-good	5.4	43.3	183	res.	mod. res.
McGregor	102	100	67	(26)	good	5.2	43.4	184	res.	mod. res.
NorLin	100	95	63	(25)	fair-good	5.6	42.9	182	res.	mod. res.
NorMan	102	97	64	(25)	fair-good	5.7	44.2	177	res.	mod. res.

Average yield: 1747 kg/ha (1558 lb/acre) in Manitoba trials (1982-86).
***Drying property measured in iodine units.*

• Yields by Crop Variety Zone (percent)

	ZONE					
	1	2	3	4	5	6
Number of Years Tested	5	5	5	5	5	2
Variety						
Dufferin*	100	100	100	100	100	100
Linott	92	89	93	92	89	128
McGregor	104	103	104	101	97	98
NorLin	103	100	98	108	96	113
NorMan	99	103	102	106	99	118
***Dufferin Check**						
kg/ha	1750	1580	1987	1546	1790	933
lbs/acre	1561	1409	1772	1379	1597	832

LENTILS

• Recommended Varieties

Eston – all zones
Laird – all zones

• Lentil Variety Descriptions

Type	Variety	Years Tested	Yield as % of Laird	Days to Mature	Seed Wt. g/1000	Plant Height cm	Plant Height (in)
Persian	Eston	5	131	95	37	40	(16)
Chilean	Laird	5	100*	102	69	54	(21)

Average yield: 1410 kg/ha (1258 lbs/acre) in Manitoba trials (1982-86).

• Yields by Crop Variety Zone (percent)

Variety	Zone			
	1	2	3	5
Eston	132(4)**	112(5)	140(5)	131(4)
Laird*	100(4)	100(5)	100(5)	100(4)
***Laird**				
kg/ha	1404	1685	1384	1302
lbs/acre	1252	1503	1235	1161

***Number of years tested.*

MUSTARD

• Recommended Varieties

Yellow
Gisilba – all zones
Kirby – all zones
Ochre – all zones
Tilney – all zones

Oriental
Cutlass – all zones
Domo – all zones
Lethbridge 22A – all zones

Comments
Brown mustard has not been included because there are no recommended licensed varieties. In Manitoba trials (1985-86), the yield of Common Brown is 112 percent of Gisilba.

The Oriental mustard variety Cutlass was developed at the Agriculture Canada Research Station, Saskatoon, from a selection of the variety Domo. Cutlass is high yielding, with higher levels of allyl isothiocyanate than existing varieties. Cutlass is significantly more resistant to race two of white rust than all established varieties. Seed will be distributed by the Mustard Association.

• Mustard Variety Descriptions

Type	Variety	Years Tested	Yield as % of Gisilba	Days to Maturity	Height		Oil
					cm	(in)	%
Yellow	Gisilba	5	100*	94	107	(43)	26.1
Yellow	Kirby	5	103	95	112	(45)	26.5
Yellow	Ochre	5	107	95	109	(44)	26.2
Yellow	Tilney	3	101	94	117	(47)	25.7
Oriental	Cutlass	2	124	93	125	(50)	37.4
Oriental	Domo	5	134	92	125	(50)	37.6
Oriental	Leth 22A	5	110	92	124	(50)	36.8

**Average yield: 1932 kg/ha (1725 lb/acre) in Manitoba trials (1982-86).*

• Yields by Crop Variety Zone (percent)

Variety	Years Tested	Zone			
		1	3	4	5
*Gisilba	5	100	100	100	100
Kirby	5	106	100	106	101
Ochre	5	108	100	103	98
Tilney	3	100	101	100	87
Cutlass	2	134	115	129	100
Domo	5	146	130	148	115
Leth 22A	5	116	106	123	88
***Gisilba Check**					
kg/ha		2082	1970	1450	2068
lb/acre		1859	1759	1295	1846

Zones 2 & 6 are not included due to lack of test sites.

POTATOES

• Recommended Varieties

Early Crop	Storage
Red: Norland	Red: Norland, Red Pontiac
White: Warba	White: Norchip, Kennebec, Shepody
Carlton	Russet: Russet Burbank

• Potato Variety Descriptions

• **Carlton:** An early maturing variety with white-skinned oval, shallow-eyed tubers that size as early as Warba. Boiling quality is similar to Warba.

• **Warba:** An early maturing variety with a white-skinned, pink deep-eyed, scab-susceptible tuber suitable for early initial harvest and table stock use. Commercial market acceptability is for a very limited volume over a short period of time.

• **Norland:** A good-yielding early-maturing variety with red-skinned, shallow-eyed tubers, suited for early harvest and storage until mid-winter.

• **Norchip:** A good-yielding, medium-maturing variety with white-skinned high specific-gravity tubers. It has acceptable chipping characteristics and a short dormancy period.

• **Kennebec:** A very late-maturing high-yielding variety with white-skinned, shallow-eyed tubers suitable for chipping. It is susceptible to greening.

• **Red Pontiac:** A high-yielding drought-tolerant variety with red-skinned, medium deep-eyed tubers of low dry matter content. Suitable for table stock use.

• **Russet Burbank:** A high-quality, late-maturing variety with russet-skinned, long, shallow-eyed tubers suitable for processing (other than chips), baking and table stock use. Its tuber shape can be extremely variable if plants are subject to stress during the tuber enlargement period of growth.

• **Shepody:** A high-quality, late mid-season maturing variety, with large, white-skinned, oblong-to-egg-shaped tubers. Yield, specific gravity, and french-fry color are similar to Russet Burbank. First harvest for processing is expected to be acceptable at a minimum of five to seven days earlier than Russet Burbank.

SAFFLOWER

Saffire is the only registered variety of safflower in Canada. It has certain advantages over varieties originating in the U.S., notably resistance to sclerotinia head rot. The bright, white seed coat of Saffire makes it suitable for the birdfeed market.

SOYBEANS

• Recommended Varieties

	Maturity Group	Minimum Corn Heat Unit Requirement
Baron	000	2450
KG 20	00	2400
Maple Amber	000	2300
Maple Ridge	000	2300
McCall	00	2500

Comments

Soybeans are placed into maturity groups based on their photoperiod sensitivity. Soybeans in the 00 maturity group are the earliest maturing photoperiod sensitive soybeans, adapted for production in the 45 to 50 degree latitude range. Those in the 000 group are very early maturing and photoperiod insensitive, adapted for production at high latitudes.

Seed treatment with the specific inoculum is essential.

• Soybean Variety Descriptions

Variety	Yield as % of Maple Amber	Years Tested	Seed Wt. g/1000	Days to Maturity Average	Days to Maturity Range	Protein Content %	Oil Content %	Height cm	Height (in)
Baron	105	3	156	109	100-124	40.7	20.7	71	(28)
KG 20	108	4	175	108	100-126	40.8	19.1	74	(29)
Maple Amber	100*	5	151	113	101-130	41.0	21.3	75	(30)
Maple Ridge	108	5	139	107	98-118	41.5	19.6	65	(26)
McCall	98	5	144	114	106-134	39.7	20.0	78	(31)

**Average yield 2579 kg/ha (2301 lbs/acre) in Manitoba trials (1982-86).*

SUGAR BEETS

This crop is grown under contract with Manitoba Sugar Company, and seed is provided under the contract.

SUNFLOWERS

• Recommended Hybrids

All oilseed hybrids listed in the hybrid description table are recommended in Zones 1 and 2 (south of Township 18), and Zones 2A, 3, 3A, and 4 (south of Township 19).

The non-oilseed hybrids are recommended only in Zones 3 and 3A.

• Sunflower Hybrid Descriptions

Oil Type	Yield as % of 3 Checks**	Years Tested	Days to Maturity	% Oil (10% Moisture)	Resistance to: Rust	Verticillium Wilt	Downy Mildew***
Car. 204	94	5	118	39.2	fair-poor	good	good
Car. 205	95	5	117	41.6	fair-poor	good	fair
Car. 206	96	5	120	39.5	fair-poor	good	fair
Car. 207	110	5	118	37.7	good	good	poor
Challenger*	101	3	116	41.1	fair-poor	good	good
DO 164	92	5	117	39.9	good	good	good
DO 844	93	4	116	39.4	good	good	good
DO 855*	96	3	117	41.2	good	good	good
IS 3001	94	4	117	42.1	fair-poor	good	fair
IS 3312*	96	3	116	43.1	fair-poor	good	good
IS 7000	93	5	115	41.9	good	good	fair-poor
7101 (IS)	96	5	116	40.1	fair-poor	good	good
IS 7111	95	5	115	42.5	fair-poor	fair	fair-poor
PAG SF 102	94	5	118	39.3	fair-poor	good	fair
PAG SF 103*	105	3	117	38.3	good	good	poor
S1283 (Stauffer)	93	4	110	42.0	fair-poor	fair-poor	fair
S1888 (Stauffer)	95	5	117	40.1	fair-poor	good	good
S316 (SeedTec)	93	5	118	40.3	fair-poor	good	fair
SigCo 448	88	5	119	42.1	good	good	fair
SigCo 450	93	5	118	40.4	fair-poor	good	fair
Sun M20	88	5	109	41.6	fair-poor	fair-poor	poor
Sunbred 265	99	5	117	40.6	good	good	good
Non-oilseed Type				**Seed Size % over 20/64**			
D131	100	5	118	25	good	fair	poor
Royal Hyb. 2141*	102	4	116	17	good	good	poor
SigCo 954	97	4	117	48	good	good	poor
SigCo 964*	106	3	114	29	good	fair-poor	poor

**On recommended list for first time.*

***Mean of hybrids Cargill 205, Cargill 207, and 7101(IS). Average yield, 1982-86, all Manitoba: 2472 kg/ha (2205 lb/acre)*

****Reactions indicated are those to race 2 of the downy mildew pathogen. However, hybrids are all highly susceptible to race 3, currently well established in Manitoba.*

Lodging resistance data available in the **Manitoba Regional Sunflower Performance Tests Report.**

• Corn Hybrid Descriptions — Grain and Silage

Heat Unit Rating**	Brand and/or Hybrid Name	Hybrid Type[1]	Days to Silk	Stalk Break (%)	Root Lodg. (%)	Grain Density (% of mean)[2]	Grain Moisture (%)	Grain Yield (% of mean)[3]	Silage Yield (% of mean)[4]	Plant Moisture %
	Limagrain LG3	3W	71	8.6	6.5	102	31.5	92	85	63.5
2150	Pickseed 2435*	3W	72	8.5	8.4	104	28.2	99	88	59.1
	Pickseed 2488	3W	72	9.3	4.5	101	27.2	96	79	57.4
	Pioneer 3995	3W	70	10.1	3.8	102	29.8	96	86	61.8
	Pride K730	3W	74	7.4	2.4	105	27.0	101	103	62.5
2200	Co-op 2350	MSC	74	9.3	2.5	101	29.0	97	98	61.8
	Funk G4017*	3W	74	7.1	2.3	103	28.4	113	110	62.5
	Limagrain LG 133	3W	73	8.7	4.8	101	30.5	99	97	64.1
	Pickseed 2120	3W	73	7.7	3.2	99	31.8	96	100	62.7
	Pioneer 3994	3W	71	7.3	2.7	99	32.8	96	94	63.6
	Pioneer 3996	3W	73	10.2	2.9	102	30.2	97	94	60.6
	Pride K025*	3W	73	9.3	2.8	101	28.7	94	96	56.0
2250	Dekalb DK246	3W	75	7.8	4.3	98	32.0	94	91	59.1
	Funk G4083	SC	74	11.2	1.9	104	30.9	99	100	65.1
	Hyland HL3251	3W	72	8.5	4.0	100	33.5	100	100	64.9
	NK PX9028	3W	75	5.4	2.4	101	28.6	106	115	62.9
	PAG SX104	MSC	73	11.7	2.3	98	32.7	97	104	61.8
	Pioneer 3969	SC	74	7.1	1.9	98	31.9	114	107	63.7
	Pride K1107	3W	75	11.0	3.6	97	32.0	100	95	61.6
	(UGG) MAC RL211	3W	75	8.7	1.5	101	31.9	104	105	65.4
2300***	Co-op 2325*	SC	77	8.6	4.2	98	30.4	106	107	63.9
	PAG SX95	MSC	75	6.9	8.0	96	31.8	101	103	64.1
	Pickseed 2020	SC	75	9.5	4.2	101	31.4	101	93	65.8
	Pickseed 2240	MSC	76	7.1	2.8	101	31.9	110	102	66.6
	Pickseed 2555A	MSC	76	9.5	8.0	98	32.9	107	115	63.6
	Pride K035*	MSC	75	8.6	4.3	95	34.0	102	–	–
	Pride R090	MSC	76	12.2	3.3	97	33.2	92	96	60.5
	(UGG) MAC RL215	3W	77	8.7	2.7	101	32.9	94	105	65.5
2350***	Pride 1111	SC	76	11.3	2.3	95	33.6	102	107	64.2

*On recommended list for first time.

**Entries arranged alphabetically within heat unit (HU) categories. HU requirements of a hybrid may vary slightly from year to year, and therefore relative yearly ranking may change. HU ratings based on HU requirement to mature grain.

***Insurance coverage not available. Check with Manitoba Crop Insurance for coverage on lower heat unit hybrids.

Data based on Morden, Ridgeville, Brandon, Carman test site results, 1984-86 (10 station years).

[1] SC = single cross, 3W = three way cross
MSC = modified single cross

[2] Mean grain density = 637 kg/m³ (51.0 lb/bu)

[3] Mean grain yield = 3.41 t/ha (54.9 bu/ac)

[4] Mean silage DM yield = 10.0 t/ha (4.35 t/ac)

• Corn Hybrid Descriptions — Silage Only

Heat Unit Rating*	Brand and/or Hybrid Name	Hybrid Type[1]	Days to Silk	Root Lodg. (%)	Silage Yield (% of mean)[2]	Plant Moisture (%)
2400	Co-op S259	SC	78	13.1	116	65.0
	Funk G4066	MSC	77	1.9	106	67.4
	N.K. PX414	3W	77	3.3	113	67.3
	Pioneer 3953	SC	76	1.7	117	65.7
2450	Dekalb XL6	SC	79	2.8	115	67.5
	Jacques JX5	SC	78	5.0	114	66.9
	PAG SX111	SC	79	2.8	111	66.8
	Pickseed 2344	3W	78	4.0	113	67.9
	Pioneer 3957	SC	77	2.8	112	67.6
2500	Co-op 2610	MSC	79	7.1	117	68.0
	Dekalb T778	MSC	79	7.2	113	69.4
	First Line 1626	SC	79	2.5	118	69.1
	Funk G4086	3W	78	4.1	103	68.0
	Funk G4102	3W	80	2.7	125	70.5
	Hyland HL2428	SC	79	2.8	127	68.3
	N.K. PX9902	3W	79	2.7	119	69.6
	Pride 1131	SC	79	3.8	115	67.6
	Pride R108	3W	78	4.4	99	69.1

**Entries arranged alphabetically within heat unit (HU) categories. HU requirement of hybrid may vary slightly from year to year; therefore relative yearly ranking may change. HU ratings based on HU requirement to mature grain.*

[1] SC = single cross; 3W = three way cross; MSC = modified single cross

[2] Mean silage DM yield = 10.0 t/ha (4.35 t/ac)

Data based on Morden, Ridgeville, Brandon test site results, 1984-86 (9 station years).

FORAGE CROPS

GRASSES

• Recommended Varieties (listed in alphabetical order)

Bluegrass

Bromegrass
Carlton
Magna

Creeping Red Fescue*

Crested Wheatgrass
Fairway
Nordan
Parkway

Intermediate Wheatgrass
Chief

Meadow Fescue
Ensign
Trader

Orchardgrass
Kay

Reed Canarygrass*

Russian Wild Ryegrass
Swift

Slender Wheatgrass
Revenue

Tall Wheatgrass
Orbit

Timothy
Champ – pasture type
Climax – hay type
Itasca – hay and pasture
Timfor – hay and pasture

**Insufficient data available for variety recommendation.*

LEGUMES

• Recommended Varieties (listed in alphabetical order)

Alfalfa

Early maturing
Apica – hay type
Anchor – hay type
Angus – hay type
Blazer – hay type
Citation – hay type
Endure – hay type
Hunter – hay type
Pacer – hay type
Peak – hay type
Thor – hay type
Turbo – hay type
Vista – hay type

Medium maturing
Algonquin – hay type
Beaver – hay type
Glory – hay type
Minto – hay type
Valor – hay type

Creeping rooted
Drylander – pasture type
Rambler – pasture type
Rangelander – pasture and hay type
Roamer – pasture type
Spredor II – pasture type

• Recommended Varieties — continued

Alsike Clover*

Red Clover*

Birdsfoot Trefoil
Cree – for seed and pasture
Empire – for seed and pasture
Leo – For seed and pasture

Sweet Clover
Norgold – yellow blossom, low coumarin
Polara – white blossom, low coumarin
Yukon – yellow blossom

**Insufficient data available for variety recommendation.*

Comments
Early-maturing, medium-maturing and creeping-rooted alfalfas are recommended in Manitoba. The early-maturing varieties develop quickly in the spring, and provide more and earlier regrowth than medium-maturing varieties. The medium varieties are more winter hardy than the early varieties. Creeping-rooted alfalfas are somewhat lower yielding than either the early or medium maturing types but they are the most persistent.

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CHANGES TO *THE 1986 FIELD CROP PRODUCTION RECOMMENDATIONS FOR MANITOBA* BOOKLET

New and relevant information for the above publication can be found in the following pages.

Inoculation of Pulse Crops

(field peas, lentils, field beans, fababeans, soybeans)

Pulse crops are legume plants belonging to the same botanical family as alfalfa and sweet clover. They have the capacity to capture atmospheric nitrogen, and transform it into useable plant nitrogen in the form of amino acids and proteins. This process is called "nitrogen fixation."

N-fixation takes place in nodules attached to the roots of legumes. Nodules are large bundles of cells which form when bacteria of the species *Rhizobium* invade the root hairs, shortly after germination. Rapid cell multiplication takes place to form the gall-like structures.

To ensure rapid development and optimum N-fixing activity, it is necessary to have sufficient numbers of bacterial (rhizobial) cells close to the seed. Rarely do soils contain rhizobia of the right types, or in sufficient numbers for the pulse crop being grown. Therefore, rhizobia must be added to the seed, or to the soil prior to seeding. This is called inoculation.

Inoculation Methods

There are three major ways of innoculating:

- With peat-based powder inoculant (peat is used as a carrier for the rhizobia cells), added to the seed as a wet slurry (preferably including a "sticker") immediately prior to seeding.
- With a granular peat/clay-based inoculant added to the soil at the time of seeding.
- With a peat-based powder inoculant added dry to the seed in the drill box immediately prior to seeding.

Of the three, the first and second methods are the most effective, and are recommended. Unfortunately though, the third method is the most commonly practised because it is the simplest. However, it is also the least effective in producing abundant nodulation on all plants. The first two methods ensure each seed is in contact with inoculant (rhizobial cells), but the latter method distributes the inoculant so unevenly that many seeds leave the drill box with virtually no inoculant adhering to them.

Inoculant Specificity

Inoculants for all pulse crops are available commercially. The cost is very low compared to the cost of the nitrogen fertilizer which they replace.

It is essential that the *inoculant specific to the crop being sown is applied.* There are different species of Rhizobium which infect different pulse crops. Thus, pea rhizobia will not work on fababeans, and vice versa; nor will field bean inoculant work on soybeans. In the case of lentils, some companies sell inoculant which contains rhizobia for both peas and lentils; there are sufficient specific rhizobia to be effective when applied to either crop.

continued

Expiry Date

Do not use old (last year's) inoculant. Packages should have an expiry date stamped on them, so a check can be made to ensure your inoculant is fresh. If it is purchased well before seeding, store in a cool, dark place (UV light rapidly kills the rhizobia). Apply inoculant to the seed immediately before seeding, and protect all treated seed from sunlight.

Field Bean Inoculant

For reasons not fully understood, field beans are the least affected by rhizobia. Some plants are very well nodulated, while others carry few if any nodules in spite of adequate inoculation. This has led some producers to add N fertilizer to field beans, in addition to or instead of inoculating.

Check for Nodulation and Nodule Activity

It is a good idea to check nodulation three to four weeks following emergence. Carefully dig up plants, preserving the finer roots, and look for nodules. Most nodules will be congregated around the main (tap) root. At this stage, they will be small but active. Nodules which are fixing nitrogen will be pink inside, and slicing the nodule with a knife or thumb nail will reveal this colour. The absence of the pink colour indicates an inactive nodule.

TABLE 2: SEED TREATMENT FUNGICIDES AND INSECTICIDES

ACTIVE INGREDIENT	INSECT: WIREWORMS: Wheat	Oats	Barley	Rye	Flax	SEED MAGGOTS: Field Beans	Corn	Soybeans	FLEA BEETLES: Canola (Rapeseed)	Mustard	DISEASE: SEED AND SEEDLING ROTS/BLIGHTS: Canola (Rapeseed)	Mustard	Peas	Cereals	Flax	Rye	Corn	Field Beans	Soybeans	SMUTS CARRIED: ON SEED: Corn-Head Smut	Rye-Stem Smut	Wheat-Bunt	Oats-Smut	Barley-Covered	Barley-Fallseloose	IN SEED: Wheat-Loose Smut	Barley-Loose Smut	BLACK LEG: Canola (Rapeseed)	VERTICILLIUM WILT: Alfalfa
INSECTICIDES																													
carbofuran (Gr)									•	•																			
lindane (Wp)	•	•	•	•		•	•																						
terbufos (Gr)									•	•																			
FUNGICIDES																													
benomyl-thiram (Du)											•																	•	
captan (Du,Wp)													•				•	•	•										
carbathiin (Sn)															•	•					•	•	•	•	•	•	•		
carbathiin-thiram (Du,Su)															•	•	•		•		•	•	•	•	•	•	•		
maneb (Du,Su)														•	•	•						•	•	•	•				
mancozeb (Wp)															•		•					•	•	•	•				
thiram											•	•	•				•	•	•										•

TABLE 2: SEED TREATMENT FUNGICIDES AND INSECTICIDES (Continued)

| ACTIVE INGREDIENT | INSECT | | | | DISEASE | | | |

INDEX OF SEED TREATMENTS USED IN TABLE 2

Chemical	Formulation	Product Name
Benomyl, captan lindane	Su, Du	Gammasan Plus
Benomyl, thiram	Wp	Benlate T Benomyl – Thiram Fungicide Seed Dressing
Benomyl, thiram	Du	Thiralin-plus
Lindane	Du	Ipco Benolin-R Insecticide/Fungicide Dust
Captan	Su	Chipman Flowable Seed Treatment
	Wp	Captan 75 Seed Protectant
	Su	Captan SP-4 Flowable
Captan, diazinon	Wp	Chipman Agrox I.F. Dual Purpose Seed Treatment
Captan, lindane, diazinon	Du	Agrox D-L Plus Insecticide/Fungicide Drill and Seed Treatment Powder
	Du	Pickseed D-L-C Seed Box Treatment
	Du	Drillbox Diazinon-Lindane Plus Captan Seed Treatment Powder
	Du	DCL Slurry
	Du	Co-op Rapeseed and Mustard Seed Treatment
	Du	Co-op D-L & C Drill Box Seed Treatment
	Wp	Chipman B-3 Dual Purpose Seed Treatment
Captan,thiophanate-methyl, diazinon	Du	DCT Dual Purpose Seed Treatment
Carbathiin	Sn	Vitaflo 250
	Sn	Vitavax Solution Seed Protectant
Carbathiin, lindane	Sn	Vitavax Dual Solution
Carbathiin, thiram	Du	Vitavax Powder
	Su	Vitaflo 280, Anchor
Carbathiin, thiram, lindane	Du	Vitavax RS Powder
	Su	Vitavax RS Flowable
	Du	Vitavax Dual Powder Seed Protectant
	Su	Vitaflo DP
Carbofuran	Gr	Furadan CR-10
	Gr	Furadan 5G
Penaminosulf	Wp	Lesan
Iprodione, lindane	Su	Rovral ST
Lindane	Wp	Lindane
Maneb	Wp	Agrox NM Drill Box Seed Treatment Powder
	Su	Agrox Flowable Seed Treatment Fungicide
	Du	Pool NM Drill Box Seed Treatment
	Du	Pool Seed Treat Powder
	Wp	Manzate D Agr. Fung.
	Du	Co-op NM Drill Box Seed Treatment
Maneb, lindane	Du	Pool NM Dual Purpose Drill Box Seed Treatment
	Su	Mergamma Flowable Dual Purpose Seed Treatment
	Du	Pool Dual Purpose Seed Treatment
	Du	Mergamma NM Drill Box Dual Purpose Seed Treatment
	Du	Co-op NM Dual Purpose Seed Treatment
Mancozeb	Wp	Dithane M-45 Seed Protectant
	Wp	Manzate 200 Mancozeb Fungicide
Metiram	Wp	Polyram Dust (Metiram)
	Su	Polyram 7 Fungicide Seed Protectant
Terbufos	Gr	Counter 5G
Thiram	Su	Gustafson 42-S Thiram Fungicide
	Wp	Thiram 75 WP Wettable Powder Fungicide
	Su	Thiram 320 Flowable Fungicide
	Wp	Thiram 75-WP
	Wp	Pfizer Thiram 75 Seed Fungicide Du

ADDITION TO PAGE 34

Fusarium Head Blight (Scab) – Fusarium head blight can develop in a wheat crop when infected debris is present, and preliminary observations suggest that durum and semi-dwarf wheats may be more susceptible. Experience in southern Ontario indicates that overwintered corn debris can result in most damage to the next crop. To minimize the risk of Fusarium head blight in outbreak areas, working in debris, and rotating away from wheat and corn, may be beneficial.

Tan Spot/Septoria Leaf and Glume Blotch – Tan spot and Septoria diseases are becoming more prevalent in wheat in Manitoba. The cause is a fungi which survive from one year to the next in infected wheat straw and stubble. Rotations away from wheat for at least one year are recommended to reduce disease severity, because early-season outbreaks of tan spot/ Septoria have been found in fields cropped to wheat the previous year. Dithane M45 is registered for use as a foliar protectant.

Leaf Rust – Leaf rust can cause yield loss to susceptible varieties of spring wheat under favorable conditions for disease outbreaks. Dithane M45 is registered as a foliar protectant – two applications of 2.25 kg/ha (2 lbs/acre) are recommended. The first application should be made when the flag leaf has fully expanded, and the second application 10 days later. Dithane M45 may be applied by either ground or aerial spray equipment. Do not apply within 40 days of harvest.

ADDITION TO PAGE 36

Dithane M45 is registered as a foliar protectant against leaf rust; Bayleton is registered for foliar application to control leaf and stem rust. These products should be applied at specific plant growth stages – for details of the precise timing of application, see the label of the particular chemical. Thorough coverage of the upper flag leaf is essential. Do not apply Dithane M45 within 40 days of harvest, and Bayleton within 60 days of harvest.

ADDITION TO *FERTILIZER* SECTIONS OF ABOVE PAGES

(For winter wheat, fababeans, field beans, field peas, flax, mustard and potatoes.)

Sulphur deficiency may occur in many other soils, and in any area of the province. Because of this, a soil test is recommended to establish the available sulphur status of your fields.

ADDITIONS TO FLAX SECTION, PAGES 45 AND 46

Depth of Seeding – Shallow, uniform seeding is recommended, and is best accomplished with a press drill. Deep seeding may result in decreased emergence and weaker plants. Spring tillage before seeding should be shallow in order to maintain a firm seedbed which promotes good stands and good plant vigor. If deep tillage is necessary, packing before or after seeding may be required.

Harvesting – If the seed is to be used for planting, care in threshing is required. The seedcoat of flax is easily broken, particularly if the cylinder speed is too high and the seed is very dry. It may be necessary to adjust the combine from time to time during the day, depending on temperature, relative humidity and the condition of the flax. Damaged seed has reduced germination.

Forage Harvesting Losses

The following table summarizes the types and magnitude of losses which might be expected under *good management and good harvesting conditions*, in a hay or silage system. Much higher losses are possible with all systems under fair or poor conditions. These figures are valid only if proper care and management is provided to all harvesting and storage operations.

Dry Matter Losses—Percent

	Silage 65% Moisture Content	Silage 45% Moisture Content	Square Bales 20% Moisture Content	Round Bales 20% Moisture Content	Loose Stacks 25% Moisture Content
Respiration and Weathering Loss	4	6	10	10	9
Harvesting Loss	2	3	3	5	10
Storage Loss	10[1]	5[2]	3[3]	6[4]	10[4]
Feeding Loss	4	4	5	5	5
TOTAL	**20%**	**18%**	**21%**	**26%**	**34%**

1 *Bunker silo sealed with plastic cover*
2 *Steel tower silo*
3 *Hay shelter*
4 *Outside storage*

(Source: O. Fresen, Manitoba Department of Agriculture)